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Farm-Retail Price Spreads for Dairy Products 1939-66

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June 1967

SUMMARY

Farm-retail price spreads for dairy products are the differences between retail prices and the prices paid to farmers for the equivalent quantity of raw milk delivered to processing plants. They provide a statistical summary of what happens to milk from the time it is delivered to the plant until it reaches the consumer as bottled milk, butter, cheese, evaporated milk, or ice cream. The study reported here was undertaken to appraise the significance of changes in these spreads since 1939.

The farm-retail spreads for butter account for the lowest percentage of the retail prices, and those for ice cream for the highest; the other three products are closely grouped in the middle range.

The farm-retail spread for butter was 26 percent of the retail price in 1966. This reflects the comparatively simple churning process; a high value per pound of the product, which reduces transportation cost; modest refrigeration requirements; and minimum spoilage at the retail level.

The 1966 fluid milk farm-retail spreads amounting to 52 percent of the retail price for milk purchased at stores and 57 percent for home-delivered milk reflect one low cost operation and one more expensive. Pasteurizing and bottling are comparatively simple and inexpensive operations. Delivery expenses are high as compared with other milk products, however, because the finished product is bulky and perishable.

The evaporated milk farm-retail spread was 52 percent of the 1966 retail price. This reflects complicated processing which involves condensing, canning, and sterilizing; moderately high transportation costs; and minimum costs of open-shelf handling in retail stores.

The farm-retail price spread for American processed cheese was 56 percent of the retail price, reflecting mainly the cost of the two-stage operation of making natural cheese and then processing various lots into a uniform product and factory-packaging it. The subsequent transportation and retailing costs are moderate.

For ice cream, the farm-retail spread accounted for 69 percent of the 1966 retail price--a higher percentage than for any other dairy product. This reflects several factors, one of which is the cost of sugar and flavorings which are important components of ice cream. Another is the cost of the refrigeration required to maintain subzero temperatures throughout the processing, storage, distribution, and retailing phases of marketing.

A comparison of the average farm-retail price spreads for the entire group of dairy products with farm prices of milk since World War II shows that more efficiency has been gained in the production of milk than in its marketing. Dairy farmers produce more milk at a lower price as a result of mechanization, larger herds, and increased output per cow. The average farm-retail spread--which is the price for performing the marketing functions of processing, transportation, storage, and distribution --has widened. The wider spreads indicate that the more efficient methods which have been adopted have not been sufficient to offset higher costs.

Ice cream is the only dairy product for which marketing costs have declined in recent years. This achievement has arisen from the efficiency of factory packaging, use of larger containers, improved refrigeration, and a shift to grocery store distribution.

The fluid milk farm-retail spread margins rose substantially until 1960, but since then the spread for milk sold through stores has decreased. This reflects increased efficiencies in processing and transportation and strong competition at the retail level.

In the absence of significant technological advances or retail competition in the marketing of home-delivered milk, evaporated milk, and processed cheese, farm-retail spreads for these products have advanced as costs have risen.

FARM-RETAIL PRICE SPREADS FOR DAIRY PRODUCTS, 1939-66

By Robert E. Freeman, Agricultural Economist
Marketing Economics Division, Economic Research Service

INTRODUCTION

For many years, compilation and analysis of data on farm-retail price spreads has been a major element of USDA research on food marketing. The basic data consist of retail food prices, derived from reports by the Bureau of Labor Statistics, and U.S. Department of Agriculture estimates of prices received by farmers for equivalent quantities of the raw foods. For some foods these series extend back to 1913. Subtracting the farm value from the retail price yields the farm-retail price spread, sometimes called the marketing margin. This spread covers assembly, processing, transportation, wholesaling, and retailing.

These data were developed in response to a lively interest by farmers in the size of their share of the consumer's dollar. The consuming public has also proved to be intensely interested in the degree to which any rises in retail food prices are the result of increases in farm prices or of increases in the farm-retail price spread.

There have been recent examples of the strong public interest in the subject. The sharply reduced farm prices for livestock in 1963 and 1964, without fully corresponding reductions in retail meat prices, contributed to the formation of the National Commission on Food Marketing, consisting of representatives of the Senate, the House of Representatives, and the public. Advances in retail prices of milk and bread in the spring and summer of 1966 led to futher attention by Congress, the Department of Agriculture, and the Federal Trade Commission.

The three major USDA publications containing historical data on prices and price spreads are "Price Spreads Between Farmers and Consumers for Food Products, 1913-44," "Farm-Retail Spreads for Food Products, 1947-64," and "Farm-Retail Spreads for Food Products" (18, 25, 19). 1/ The first two of these publications provide highlights of developments in dairy marketing and contain descriptions of the methodology used in developing prices and price spreads of the various dairy products. The most comprehensive publication on price spreads for dairy products is Howe's "Marketing Margins and Costs for Dairy Products" (12). A more recent brief analysis is Wolf's article in the February 1965 issue of "Marketing and Transportation Situation" (32). The report of the National Commission on Food Marketing (15) and technical studies by the staff on "Organization and Competition in the Dairy Industry" (16) and on "Cost Components of Farm-Retail Price Spreads for Food" (17) also deal with dairy marketing margins. The Department of Agriculture has also published a bibliography on dairy marketing costs and margins (33).

The principal objective of this study is to explore the fundamental changes in milk production and marketing which underlie the changes in farm and retail prices and in the farm-retail price spreads. Two principal analytical techniques were applied to the data for this purpose. One involved comparing price levels and farm-retail price spreads among the various dairy products. Second, trends over time were compared with the observable changes in the technology of processing and transportation and in distribution through wholesale and retail channels.

1/ Underscored numbers in parentheses refer to Literature Cited, p. 19 .

PRICES AND SPREADS FOR DAIRY GROUP

The retail costs, farm values, and farm-retail spreads for the combined group of dairy products in the years 1929-66 are shown as indexes in figure 1. The retail cost is the amount obtained by multiplying the Bureau of Labor Statistics retail prices by the quantities of home-delivered and store-sold milk, ice cream, American process cheese, evaporated milk, and butter consumed in a typical household in 1960-61. The farm value is the sum of the amounts received by farmers for the raw milk and farm-separated cream used to make these products.

In the left-hand panel of figure 1 all three series reflect the major events of the tumultuous years from 1929 to 1949. Prices and margins fell from the 1929 levels to the 1932-33 lows of the Great Depression, rose gradually during the later 1930's, advanced rapidly in the early years of World War II, were held steady by price controls in 1943-45, and shot up during the early postwar inflation.

During 1947-65, milk prices to farmers rose and then leveled off at about 95 percent of the 1947-49 average (fig. 1 right-hand panel). Marketing charges rose steadily until 1962, then leveled off. Retail prices trended gradually upward until 1962, then remained near constant through 1965.

In 1966, milk production was down 3 percent from 1965 levels. However, the demand was stronger, as indicated by an 8 percent rise in disposable personal income. These shifts in supply and demand resulted in a 12-percent rise in the farm value of milk, a 6-percent rise in the retail cost of the dairy items, and a 2-percent rise in the farm-retail spread. The farmer's share advanced 2 points to 47 percent of the retail cost, the highest percentage since 1953.

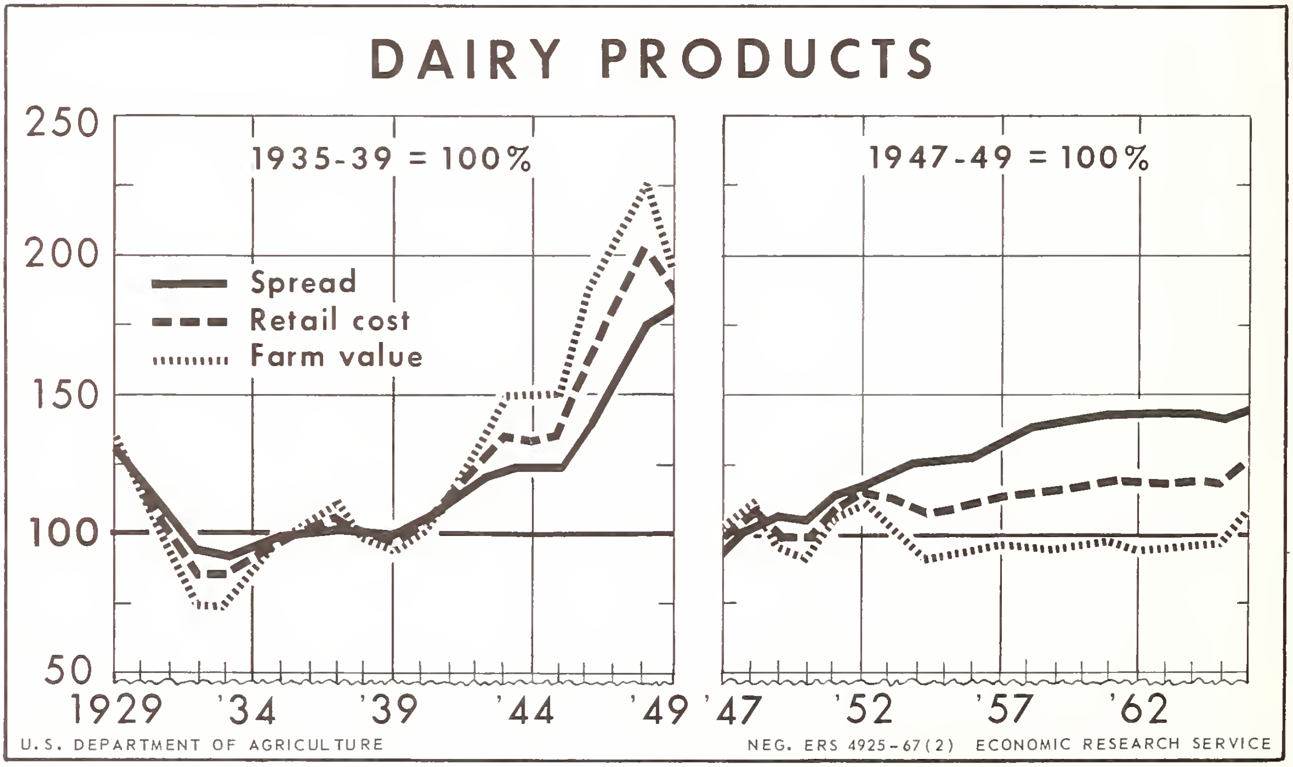

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Figure 1

The substantial rise in the farm price of milk, the slower rise in retail prices, the narrowing farm-retail spread, and the increased farmer's share are in contrast to the general postwar trend of lower farm prices and wider spreads. The new pattern illustrates a lag in the response of markups in the marketing chain and at retail. When farm prices change, the retailer does not change his prices until he reacts to higher invoice costs. Part of the lag occurs because some of the products made from lower-cost raw materials remain in the "pipeline" from factory through storage, transportation, and warehousing to retailers.

Production and Marketing Costs

The substantial differences shown in figure 1 between the behavior of farm prices and farm-to-retail spreads reflected fundamental differences in characteristics of the farm and farm food marketing sectors of the economy. The sharp drop in farm milk prices during 1929-33 reflected the exceptionally high fixed-cost structure of farming, the consequent maintenance of full output despite lower prices, and a rapid decline in consumer purchasing power. The smaller drop in retail prices and thus in farm-retail spreads reflected the greater proportion of variable costs and the comparatively modest decline in wage rates in the industry.

These same factors were responsible for the much greater increase in farm prices than in farm-retail spreads during and immediately after World War II. Increased demands for milk and dairy products for military personnel and for civilians overseas, as well as for an increasingly affluent domestic civilian population, worked against a milk supply which could not be radically expanded. As a result, farm prices rose sharply. However, the dairy marketing system had more excess capacity and fewer new demands for its services, so farm-retail price spreads rose only in proportion to the general price level.

The right-hand portion of figure 1 shows that during 1954-65 farm prices of milk stabilized at a lower level than the 1952 peaks, while the farm-retail spread has advanced steadily since 1947.

Dairymen have maintained milk output by the rapid adoption of new technology, despite lower prices than prevailed in the 1948 and 1952 peak periods. Production per cow in 1966 was up 67 percent from 1947-49, due to improved dairy cattle and heavier feeding of abundant feed grains (14, 20, 29). This makes more milk per unit of feed fed and per man-hour of labor spent in caring for the smaller number of cows. Rapid increases in the number of cows per herd also provide a basis for increased efficiency of labor and management, especially through mechanization. According to Census data, the average U.S. dairy herd size rose 59 percent from 1949 to 1959 (24, table 165). Milk production per man-hour of labor in 1965 was 2.5 times as great as in 1947-49 (26, table 19).

The dairy marketing sector also has made substantial changes since World War II. It must be recognized that these changes have not resulted in cost savings on as large a scale as the changes adopted by dairy farmers. However, the dairy marketing industry has adopted new technology at a rate which has kept increases in farm-retail spreads for dairy foods down to the same rate as increases in spreads for all foods and in the general price level. In 1966, the farm-retail spread for all farm foods was up 46 percent from the 1947-49 base, and the spread for the dairy products group was up 44 percent. During the same period, the general price level, as measured by the GNP implicit price deflator, rose 47 percent.

In a perfectly competitive economy, changes in productivity resulting from technological innovation would be reflected in market prices. The data in table 1 suggest that technological advances curb price increases at both the farm and processing levels. Output per man-hour in the production of milk advanced less than output per man-hour in production of all farm food commodities between 1947-49 and 1962-64, and farm prices declined less. 2/ In contrast, the dairy manufacturing sector made greater than average gains in output per man-hour and the farm-wholesale price spread increased less for dairy manufacturing than for all food processing.

Table 1.--Prices and productivity, 1962-64 as percentage of 1947-49

Item	Dairy Products		All
	All	Manufactured	foods
Farm prices	95		86
Farm production per man-hour	217		247
Farm-wholesale price spread	142	1/ 104	136
Output per man-hour in manufacturing farm-originated foods		173	155

1/ Computed from changes in price spreads for butter, cheese, evaporated milk, and ice cream, weighted by the average quantities of these foods purchased annually in 1960-61 by urban wage-earner and clerical-worker families, including households of single workers living alone.

Source: Prices and price spreads from Farm-Retail Spreads for Food Products, 1947-64 (25). Farm production per man-hour from Changes in Farm Production and Efficiency (26). Output per man-hour in manufacturing farm-originated foods from Marketing and Transportation Situation" (27). Farm-wholesale price spreads from special tabulation covering 1947-64.

Farm Prices of Manufacturing Grade and Fluid Grade Milk

Three major features of prices paid to farmers for milk delivered to dealers' plants deserve attention. One is that prices paid by manufacturing plants are comparatively uniform throughout the United States, regardless of the product made. Second, prices paid for milk for bottling are highly variable, geographically. Third, the USDA price-support programs have been a major price-making factor for many years.

The Department of Agriculture publishes separately the prices paid for manufacturing grade milk and the significantly higher prices paid for fluid grade milk. Manufacturing grade milk commands much the same price whether it is used to produce butter and nonfat dry milk, evaporated milk, cheese, or other products, because the manufacturing plants compete with each other for a common supply of milk. Fluid grade milk, however, must be approved by sanitation authorities for bottling purposes and must be hauled comparatively long distances for delivery at city plants. Fluid prices are higher than manufacturing prices because of the additional hauling costs on this bulky product, the cost of meeting the more rigid

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2/ A more complete analysis of changes in farm prices and output per man-hour is contained in my article, "Roles of Productivity and Marketing Margins in Postwar Decline in Farm Prices" (8). The article covers all six of the food groups.

sanitary requirements, and in many markets, the gains accruing to producers through classified pricing or bargaining activities. The difference between average fluid grade prices and average manufacturing grade prices has shown no consistent trend since 1948. It advanced steadily from $1.20 in 1950 to $1.51 in 1958, but diminished to $1.20 in 1966 (fig. 2).

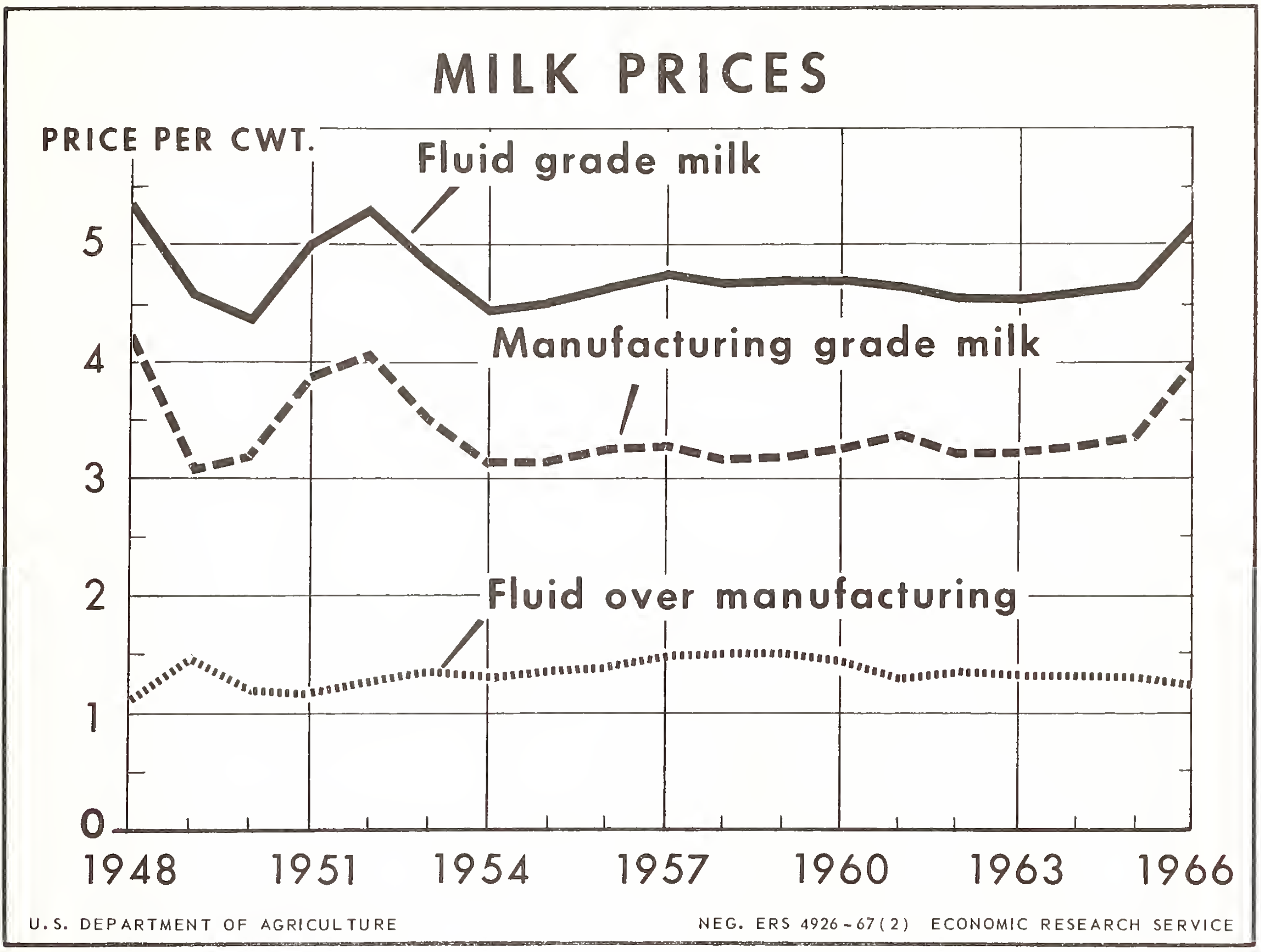

Figure 2

Price Supports

The Federal price-support program operates through purchases of butter, cheddar cheese, and nonfat dry milk. It is designed to maintain announced price levels for milk used to manufacture dairy products. These operations also support fluid milk prices, since the Class I formulas in many markets are based on manufacturing milk values, and since butter, cheese, and nonfat dry milk are made from surpluses of fluid grade milk as well as from manufacturing grade milk. Extensive price-support purchases were made from 1933 through 1941, and in 1947, 1949, and 1950, and purchases were made almost continuously from 1953 to late 1965. 3/

Net Farm Income

In figure 3, annual net farm incomes on typical Eastern Wisconsin Grade B dairy farms during the period 1930-65 are compared with prices paid by condenseries

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3/ Data through 1964 are shown in (24, table 308). For a brief review of the program see Dairy Situation (22).

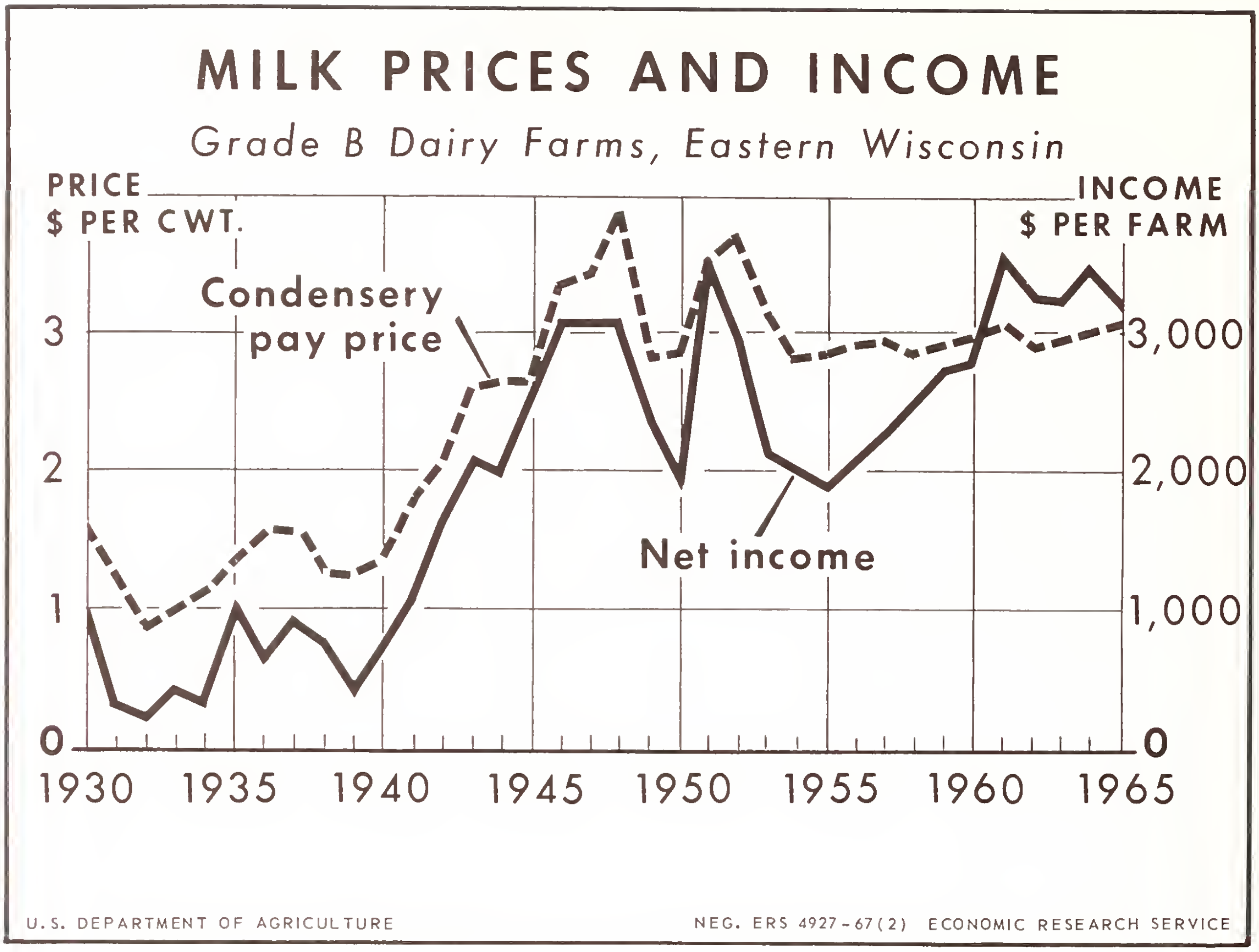

Figure 3

for milk of 3.5 percent fat content. The net income data are from annual estimates of costs and returns of typical farms compiled by the Economic Research Service.

Net incomes on these farms varied widely from one year to the next because of differences in output due to the effects of weather on pastures, hay, and feed grain, as well as price changes. Also, of course, the typical farms were not confined to dairying, so costs and returns were not geared solely to milk. Operating costs were comparatively steady, and the fluctuations in returns from sales were reflected in very large changes in net income. For this reason, changes in market prices resulted in more than proportionate changes in net income. For example, net incomes declined more sharply than prices following the Korean War through 1955, and recovered more completely after 1955.

Net farm income has shown a greater uptrend than prices since 1930. This is partly due to the fact that incomes were abnormally low in the early 1930's. The uptrend reflects larger farms and more cows per farm, a rise in milk production per cow, and a reduction in the amount of labor needed per hundred pounds of milk.

INTERPRODUCT RELATIONSHIPS

Both manufacturing grade and fluid grade milk may be used to produce any of the manufactured dairy products. Moreover, the quality distinctions between the two grades are lessening. Brief consideration will be given to some of the resulting interproduct relationships, before taking up each of the products.

Principal Uses of Milk

The principal uses of milk and its products have changed substantially since 1929 (table 2). Total production of milk rose 22 percent between 1929 and 1965, but per capita output was down 23 percent as population rose 58 percent. There was a sharp drop in the quantity of milk kept on farms where produced and a proportionate rise in the quantity marketed. The decline in farm consumption reflects the near-abandonment of farm-churning of butter, a substantial drop in fluid use on farms, mainly due to a decrease in the number of farms having cows, and some reduction in quantities fed to calves.

There was a 54-percent increase in total marketings of milk and there were major changes in principal uses during this period. In 1929, more milk was used to produce creamery butter than was consumed off farms as fluid milk and cream. By 1965, fluid consumption was clearly the major outlet, taking 47 percent of total marketings. Creamery butter production was actually lower in 1965 than in 1929,

Table 2.--Production, disposition, and utilization of milk in the United States, 1929 and 1965

Item	1929	1965	Change from 1929
	Mil. lb.	Mil. lb.	Percent
Production	1/102,133	125,061	22
Disposition:			
Used on farms	24,990	5,934	-76
Marketed off farms:			
Whole	43,335	115,314	166
Cream 3/	33,808	3,813	-89
Total off farm	77,143	119,127	54
Total disposition	102,133	125,061	22
Utilization off farms:			
Fluid use 2/	30,468	56,045	84
Factory products 3/:			
Creamery butter, net	33,012	28,903	-12
Cheese, American and other	5,052	15,750	212
Evaporated milk	3,223	3,446	7
Ice cream and other frozen dairy products, net	3,301	10,576	220
Other factory products	991	3,563	---
Total factory products	45,579	62,238	37
Exports, storage, and residual	1,096	844	---
Total utilization	77,143	119,127	54

1/ Includes 3,154 million pounds produced by cows not on farms.

2/ Total fluid consumption, on and off farms, was 41.4 billion pounds in 1929 and 58.8 billion pounds in 1963, up 42 percent.

3/ Milk equivalent (fat basis).

Source: Milk Production, Disposition and Income, 1964-65, tables 1,2, and 13 (30). Dairy Statistics Through 1960, tables 1, 50, and 311 (21).

and evaporated milk production was up only slightly, while the quantities of milk used to manufacture cheese and ice cream increased threefold.

Prices and Price Spreads

Farm-retail price spreads for the various dairy products differ substantially. The degree of processing and handling involved is a major determinant of marketing costs. Butter has the lowest percentage price spread--it averaged only 26 percent of the retail price in 1966 (table 3). Processing involves only separation of the cream from the milk, churning the cream into butter, and packaging the butter. Transportation costs are low per unit of value, spoilage is negligible under a moderate level of refrigeration, and retail stores take a modest markup. The largest price spread for a dairy product in 1966 was for ice cream, 69 percent of the retail price. Milk and sugar constitute only part of the total ingredients of ice cream; refrigeration requirements are high throughout processing, transportation, and distribution; and handling costs are comparatively large throughout the marketing process. For the other three dairy items--fluid milk, American process cheese, and evaporated milk--marketing absorbed 52 to 57 percent of the consumer's dollar in 1966. These similar percentages result from widely varying circumstances. For example, evaporated milk incurs a much greater processing cost than fluid milk, but can be handled like other canned groceries thereafter, so has lower costs of distribution.

Table 3.--Average farm-retail price spreads for dairy products, 1966

Product	Retail unit	Retail price	Net farm value	Farm-retail spread	Marketing share
		Cents	Cents	Cents	Percent
Fluid milk:					
Home delivered	½ gallon	55.5	23.9	31.6	57
Sold in stores	½ gallon	49.8	23.9	25.9	52
Butter	Pound	82.2	60.7	21.5	26
Cheese	½ pound	42.2	18.7	23.5	56
Ice cream	½ gallon	80.6	1/ 25.3	55.3	69
Evaporated milk	14½ oz. can	16.0	7.7	8.3	52

1/ Includes farm value of sugar.

Source: Marketing and Transportation Situation, February 1967, table 16, (28).

Annual prices and price spreads for each of the major dairy products are shown in appendix tables 4 through 8. Available information on the major components of the 1966 retail prices are also shown, in appendix tables 9 through 13. The Bureau of Labor Statistics began collecting prices of American process cheese in 1949, so prices collected earlier for natural cheese are not comparable with the current series. Retail prices of ice cream were first published in 1951, and prices of milk sold in stores extend back only to 1947.

In the 1939-52 period, which included World War II and the Korean action, price spreads for fluid milk fluctuated least and price spreads for butter fluctuated most. Fluctuation in spreads for evaporated milk were intermediate. The differences in variability of the farm-retail price spreads for these products reflect differences in the organization of the industries involved. In local fluid milk markets, retail prices commonly remain fixed for several months at a time. The seasonal and weekly variations in supply and sales are taken care of by converting the reserve supplies into manufactured products. Class I prices to producers are also comparatively stable. Under Federal marketing orders they are determined each month, but there are stable elements in the pricing formulas. In some markets under State controls or subject to arrangements negotiated between a producers' cooperative association and dealers, Class I prices may remain unchanged for many months. 4/

The price of butter, by contrast, is established on commodity exchanges where prices fluctuate daily. Furthermore, there is no element of supply control. Prices are adjusted to clear the market and tend to change with each indication of change in supply and demand conditions. Retail and farm prices tend to be based on the wholesale markets. Federal price-support operations have provided considerably more stability than would have prevailed otherwise, but butter prices are still more variable than other dairy product prices.

Evaporated milk is in an intermediate position. It is sold mainly through grocery stores, on a national basis, and with comparatively few changes in retail prices. However, the prices paid farmers by the evaporated milk industry fluctuate with the prices paid by competing milk manufacturers, principally manufacturers of butter, cheese, and ice cream.

In the post-Korean period, lower farm prices and wider farm-retail spreads prevailed so long and for so many of the dairy product foods that they began to take on an aspect of inevitability. The 1939-52 period provides more perspective. During the inflationary periods of World War II and its aftermath, farm prices of milk rose more rapidly than retail prices of any of the dairy products. In figures 4-8, the lower sections of each chart disclose that the farmer's share rose steadily from a low in 1940 to a high point in the post-World War II inflation of 1947-48. From 1948 to 1950, farm prices and the farmer's share dropped more rapidly than the "stickier" retail prices, but the Korean inflation again raised farm prices more rapidly than retail prices.

Retail prices of each of the products reached decided peaks in 1948 and 1952. There was a post-Korean decline in all retail dairy prices, but since then, trends in both retail prices and farm-retail spreads for the various products have diverged. Disproportionate changes in retail prices have been the prime cause of this divergence. Farm prices of milk used to make the various products differ very little, as was pointed out earlier.

SPECIFIC DAIRY PRODUCTS

Ice Cream

Retail prices of ice cream have actually fallen since 1952 (fig. 4). Since 1954, when the farm price of milk reached its post-Korean low, the farm-retail price spread has also declined. These downtrends in retail prices and in price spreads for ice cream were a decided exception to the generally upward trend of prices. The major factors were the shift from drugstore to supermarket distribution; the shift to larger packages, which was facilitated by adequate refrigeration in homes; automation in processing and packaging; and the increasing use of ice cream as a specially-priced item to attract customers to food stores.

4/ For detailed information on the economic principles of classified pricing and related characteristics of fluid milk markets see (1, 2, 4, 10, 11). Federal order prices are discussed in (9) and (23).

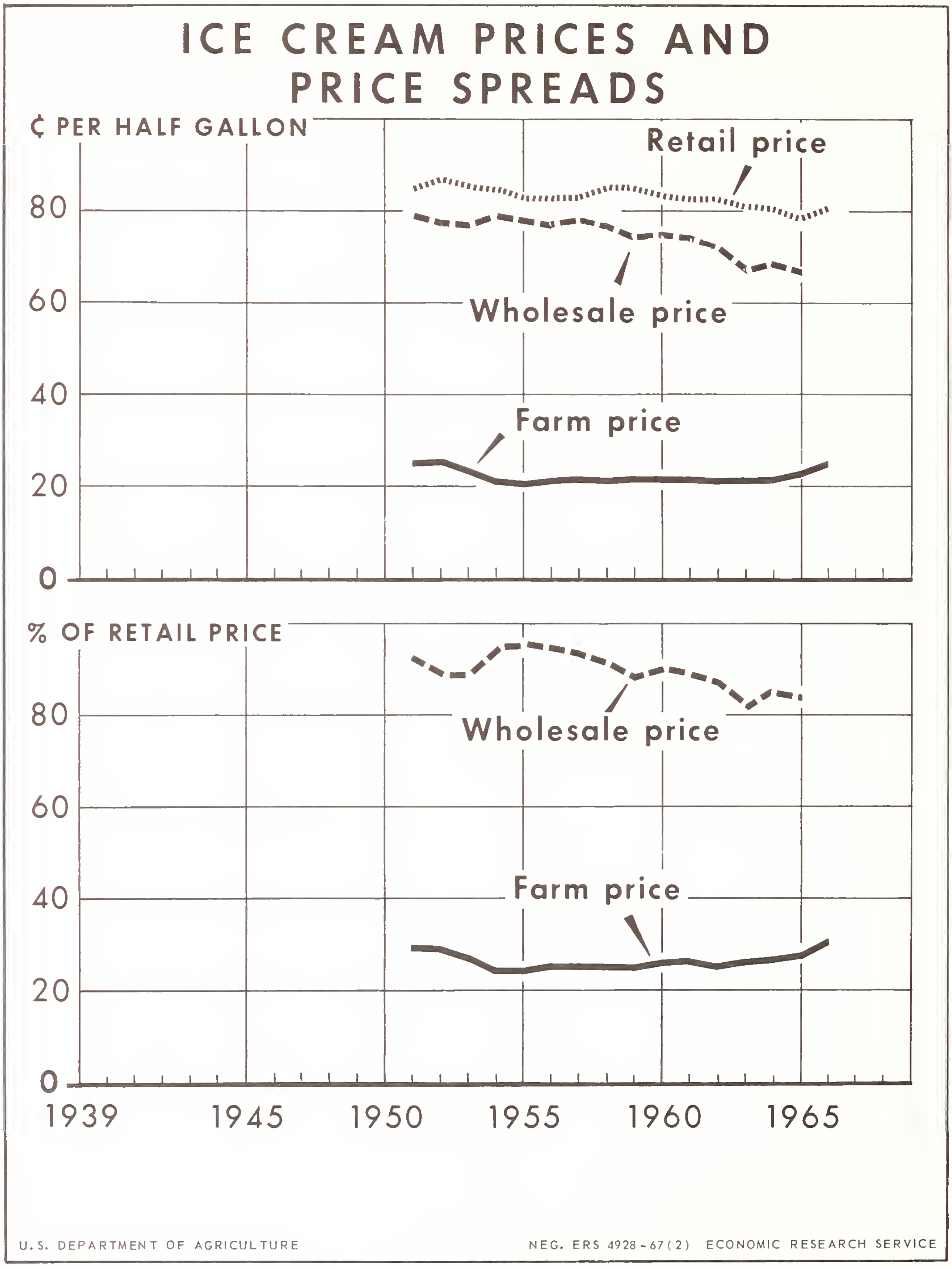
ICE CREAM PRICES AND PRICE SPREADS
¢ PER HALF GALLON
Retail price
Wholesale price
Farm price
80
60
40
20
0
% OF RETAIL PRICE
Wholesale price
Farm price
80
60
40
20
0
1939
1945
1950
1955
1960
1965
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Figure 4

Processing and distribution account for a larger share of the retail price of ice cream than of any other dairy product (appendix table 10). Processing and distribution are expensive primarily because ice cream must be manufactured and stored at such low temperatures. The equipment and power required for refrigeration are costly.

The scarcity of price data on ice cream at various stages between farms and retail outlets reflects several things. The variety of composition, flavors, and brand preferences within and between local markets makes price reporting difficult. The Department of Agriculture has not developed regular quotations in its Market News reports because ice cream makers generally obtain their dairy ingredients from other plants in the form of cream, butter, or condensed or dry skim milk, rather than directly from dairy farmers.

Cheese

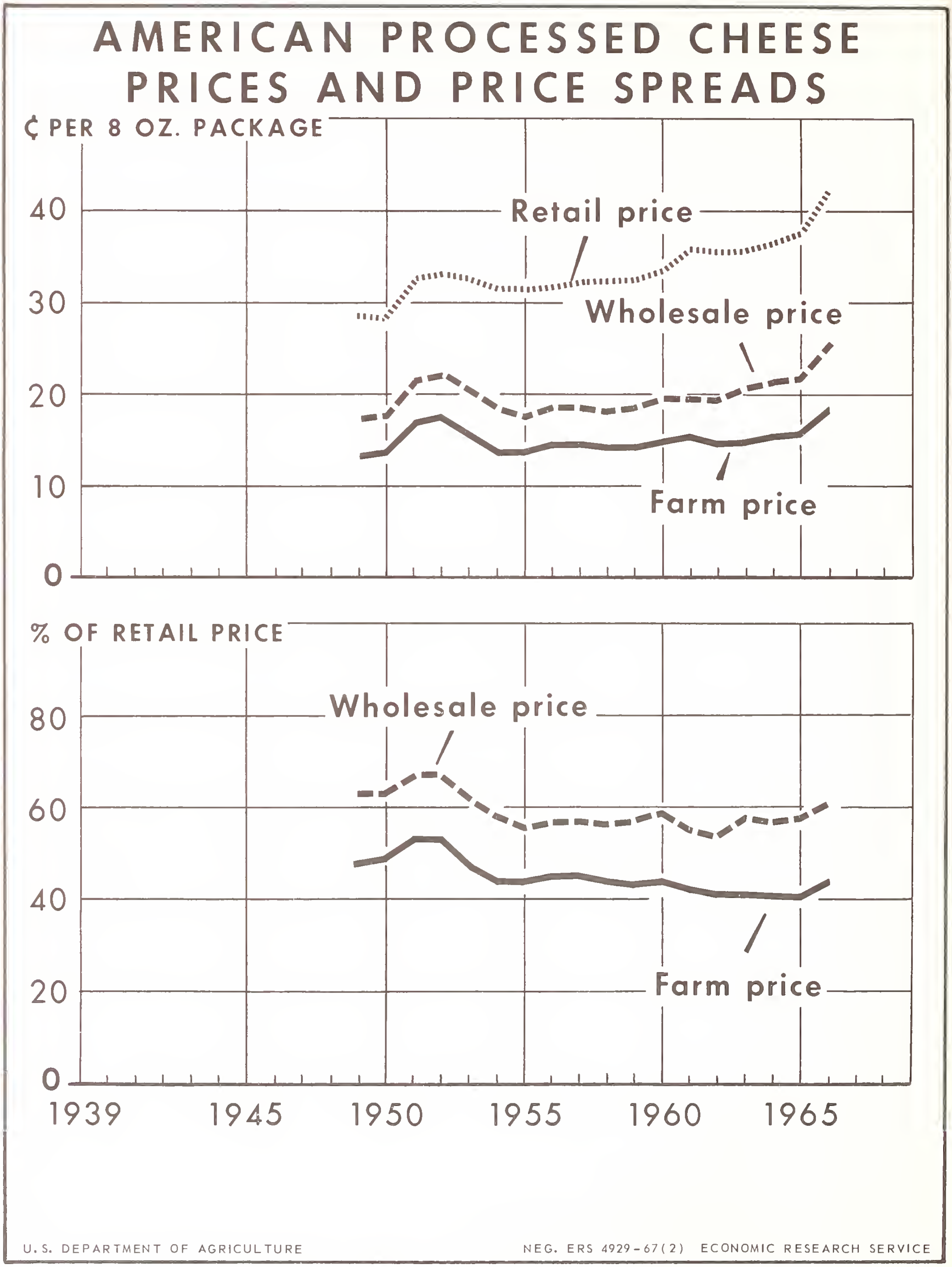
Price changes for American process cheese show the greatest contrast to the price changes for ice cream (fig. 5). Retail prices fell only moderately from 1952 to 1954 and rose steadily through 1965. The accompanying increase in the farm-retail spread reflects the rising retail prices and steady farm prices. In 1966, these postwar trends were accentuated. The proportionate rise in retail prices and farm-retail spreads was greater for cheese than for any of the other dairy products. In addition, cheesemakers bid aggressively for additonal supplies of raw milk, raising prices to farmers by a larger percentage than prices paid at condenseries, creameries, or fluid milk plants.,

The rise in retail prices reflects a considerable increase in consumer demand. From 1950 to 1965, per capita consumption of cheese, exclusive of cottage, pot, and bakers' cheese, rose 18 percent. Consumers' willingness to purchase increasing quantities at higher prices appears to be related to their recognition of the high protein content and other nutritive values of cheese, rising prices for meat, and the increasing variety of high-quality cheeses and cheese products. Rising consumer incomes have also contributed to the increasing expenditures for cheese. Brandow's study of interrelationships among demands for farm products shows a greater response to income changes for cheese than for ice cream, butter, fluid milk, or evaporated milk (3, table 3, col. 2).

In 1966, consumers paid an average price of 42.2 cents per 8-ounce package of sliced, process American cheese (appendix table 9). Of this, the cheese maker received approximately 3.9 cents for converting the milk into natural cheese and the processor 5.2 cents for making the processed product and for slicing and packaging it. These estimates are based mainly on Cook and Little's detailed study of costs and farm-retail spreads for selected lots of natural and process cheese in 1956-57 (6). The wholesale prices shown in figure 5 are from USDA Market News reports, which apply to 5-pound blocks rather than to 8-ounce packages of sliced cheese, and reflect a lower level of prices.

Fluid Milk

From 1949 to 1966, farm-retail price spreads for fluid milk rose somewhat less than for cheese, but more than for other dairy products (fig. 6).


AMERICAN PROCESSED CHEESE PRICES AND PRICE SPREADS
¢ PER 8 OZ. PACKAGE
40
30
20
10
0
Retail price
Wholesale price
Farm price
% OF RETAIL PRICE
80
60
40
20
0
Wholesale price
Farm price
1939
1945
1950
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1965
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Figure 5

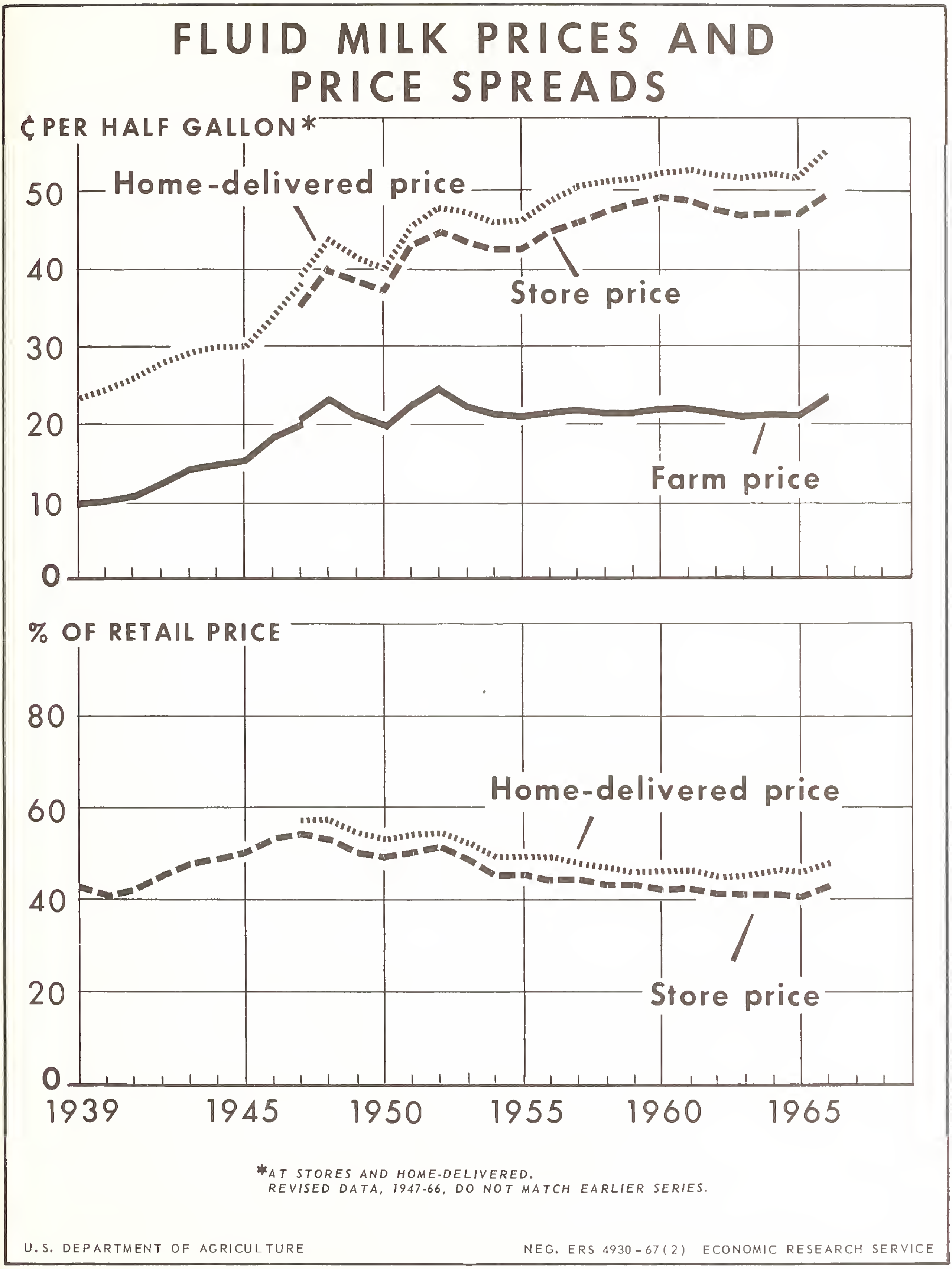
FLUID MILK PRICES AND PRICE SPREADS
¢ PER HALF GALLON*
Home-delivered price
Store price
Farm price
50
40
30
20
10
0
% OF RETAIL PRICE
Home-delivered price
Store price
80
60
40
20
0
1939
1945
1950
1955
1960
1965
*AT STORES AND HOME-DELIVERED.
REVISED DATA, 1947-66, DO NOT MATCH EARLIER SERIES.
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Figure 6

From 1939 through 1948, farm prices of milk rose steadily. 5/ This rise reflected mainly the strong demand during World War II and the postwar period of inflation. The greatly increased demand for milk and dairy products during World War II came at a time when the milk supply could not be substantially expanded. Retail and farm prices rose, but since there was comparative overcapacity in the marketing system, marketing costs did not rise so fast. This resulted in a greater proportionate rise in farm prices than in consumer prices, so the farmer's share of the consumer's dollar rose. A second peak in farm prices and the farmer's share occurred in 1952 during the Korean conflict.

From 1954 through 1965, the average price paid to farmers for bottling grade milk delivered to city plants was remarkably steady. However, retail prices and farm-retail spreads continued to rise until 1961, thus reducing the farmer's share. From 1961 through 1965 retail prices at stores declined moderately and prices for home-delivered milk were essentially constant.

In 1966, farmers received 10 percent higher prices than in 1965. Retail prices for both home-delivered and store-bought milk rose 5.5 percent, and the farm-retail spreads were 3 percent higher on home-delivered milk and 2 percent higher in the stores. The farmer's share rose 2 percentage points to 43 percent of the home-delivered price and rose to 48 percent of the average store price. It is clear from figure 6 that the price of home-delivered milk has consistently exceeded the price charged at stores, and that the gap has been widening.

There are some interesting differences in the 1966 component costs of home-delivered and store milk (appendix table 11). Processing costs were greater for milk sold through stores than for home-delivered milk, because a much higher proportion was paper-packaged. Glass containers are used more widely for home delivery and are cheaper because they average many trips per container. 6/ The second major difference is that total delivery costs are substantially lower for milk sold through stores than by home-delivery. Dealers' costs for home delivery were 21.2 cents, as compared with a dealer cost of 7.3 cents for delivery to stores and a store markup of 7.6 cents, a total of 14.9 cents on store milk. Farm-retail spreads rose rather rapidly until 1960. At that point, the spread on store milk reached a peak of 154 percent of the 1947-49 average, while the index of all foods was only 136. The index for store milk was down 5 points to 149 in 1965 and back up to 153 in 1966; the index for all foods rose steadily to 143 in 1964, fell 2 points in 1965 and rose to 146 in 1966. The farm-retail spread on home-delivered milk continued to widen, reaching a peak in 1964 of 159 percent of the 1947-49 average, declining to 158 in 1965, and rising to a new high of 162 in 1966.

Automation and larger plants have been factors in the leveling off and reduction of fluid milk marketing costs. Census data show that hourly earnings of all employees in fluid milk plants rose 39 percent from 1954 to 1963. This was almost offset by a rise in output per employee of 37 percent. Output per plant rose 90 percent as the number of plants fell drastically.

5/ Until November 1964, the Department of Agriculture published a single series on retail prices and farm-retail price spreads for fluid milk. Then, following a general revision of the Bureau of Labor Statistics retail price series, separate data were published for milk sold in stores and for home-delivered milk. The revised series were carried back to 1947 in ERS-226 (25).

6/ Cost comparisons were published in "Milk Distributors' Sales and Costs" (36), a USDA series which has been discontinued.

A second major change in the operation of the fluid milk industry was the shift to store sales. This was facilitated by the development of supermarkets, the affluence of consumers (including increased auto ownership), availability of home refrigerators, and the adoption of paper containers. According to a Bureau of Labor Statistics survey, 70 percent of the fluid milk sold to consumers was delivered to homes in 1935; USDA data show that only 30 percent was so delivered by processors in 1964 (7, 34). There are obvious savings in store distribution as compared with small-volume home deliveries. Less obvious, but no less important, is the fact that economies of the scale in the operation of larger processing plants outweigh the added costs of distributing additional quantities of milk in large vans to supermarkets over a larger territory. Cobia and Babb found that much larger plants and sales territories would be feasible than are now common in the industry (5). Moreover, the amount of advertising and prevalence of price competition make it apparent that operators of supermarkets and small stores recognize milk as a major item of consumer expenditure and a primary weapon in the battle for patronage.

The pressure on processors is evidenced by the rather steady decline in their net margins as reported in the USDA series on sales and costs (35, table 1). In these reports, net margins are the residual obtained by subtracting the cost of materials and operating expenses from sales receipts. From a peak of 63 cents per 100 pounds processed in 1953, net margins declined to 20 cents in 1963, and to 26 cents in 1964. These pressures have reduced the number of firms; Census reports show 36 percent fewer companies in 1963 than in 1954.

The retail chains also exert pressure on processors. Two national chains are extensively involved in bottling milk for their own stores, and some local chains do the same. Private label is another competitive technique of retailers. Williams and Vose estimate that 35 percent of shelf space for milk is used for private label brands in the Midwest (31). A countervailing technique is the operation of dairy stores by milk processors.

Despite the rapid decline in number of processing firms, Manchester found that in five of the largest metropolitan markets of the United States the four largest firms were doing the same share of the business in 1964 as in 1950 (13).

Farmers have furnished a more than adequate supply of fluid grade milk at prices which, from 1954 through 1965, very closely approximated the 1947-49 average. Added ouput per cow and per man-hour have offset higher costs of most purchased inputs. The sharp drop in milk production which began in 1965 reflected a greater-than-usual decline in the number of milk cows and a smaller rate of gain in output per cow. The smaller number of milk cows was caused by better than usual possibilities for off-farm employment, difficulty in obtaining hired workers, and some change to beef production. Output per cow was adversely affected by low quality roughage and drought. The decline in production has apparently now been checked. The higher market prices and support levels which have prevailed since early 1966, and the continuation of support levels through early 1968, have contributed to the increased production.

Butter

One of the principal features of prices and farm-retail margins for butter is the large share going to the farmers (fig. 7). This reflects the comparatively simple processing required and the relatively low costs of transportation and handling.

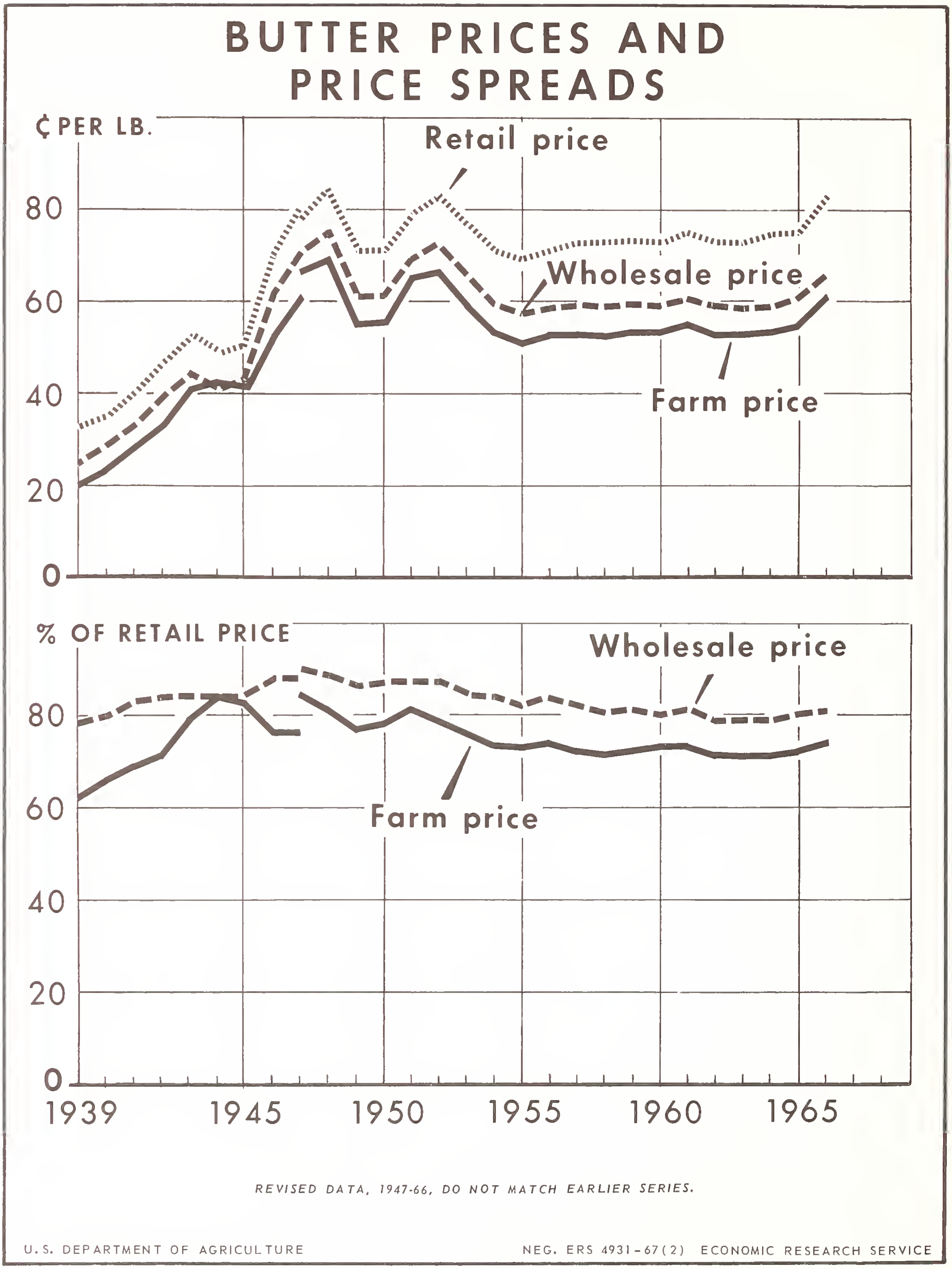
BUTTER PRICES AND PRICE SPREADS
¢ PER LB.
80
60
40
20
0
Retail price
Wholesale price
Farm price
% OF RETAIL PRICE
80
60
40
20
0
Wholesale price
Farm price
1939
1945
1950
1955
1960
1965
REVISED DATA, 1947-66, DO NOT MATCH EARLIER SERIES.
U.S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4931-67(2) ECONOMIC RESEARCH SERVICE

Figure 7

The decline in demand for butter is an important feature of the market situation which is not apparent in figure 7. Retail prices in 1966 were lower than in 1952 and were only moderately up from 1950 levels, yet per capita consumption has declined steadily. Wartime shortages of butter and competition from margarine are generally considered to be the major contributors to the decline in demand. Per capita use fell rapidly during World War II, from 17.4 pounds in 1939 to 10.9 pounds in 1945, then dropped more gradually from 10.7 pounds in 1950 to 5.5 pounds in 1966.

The wholesale price is the average for 92-score, grade A, bulk butter at Chicago. Thus, the increasing wholesale-retail price spread includes printing, packaging, and intercity transportation as well as the retail store markup. During World War II, subsidies were paid to farmers and to processors. The farm prices shown in figure 7 do not include subsidy payments. The processor subsidy enabled the creameries to function even in 1944, when there was no apparent price margin available to them.

In recent years, the wholesale-retail price spread has been widening. By contrast the farm-wholesale price spread, which covers mainly the processing function, has narrowed. There has been no change in the buttermaking process or in the movement to central markets of a magnitude which would account for this. It is likely that the lower margin is mainly a reflection of the added value of the nonfat solids in the whole milk delivered by farmers. This added value of the solids, in turn, must be due to processing efficiencies, since market prices of the finished product have remained below 1950 levels.

Evaporated Milk

Since 1947-49, retail prices and farm-retail spreads have risen more for evaporated milk than for ice cream but less than for cheese. Methods of processing and distributing evaporated milk have not changed greatly since 1939, therefore, rising costs have been reflected in larger farm-retail price spreads (fig. 8). Developments in 1966 represent a break in these trends. Prices paid farmers in 1966 rose 18 percent from 1965 prices in response to the tight supply situation. However, retail prices rose only 5 percent, and the farm-retail spread declined 5 percent. The dairy processing subindustry with the fewest firms had the best market performance as measured by price spreads in 1966. The currently prominent hypothesis is that in the long run fewer firms will be associated with the greatest market power, rising margins, and maximum profits. It is recognized, however, that the decline in margins does not necessarily indicate financial losses to the condenseries. Much of their output was manufactured during the spring flush at lower prices than are reflected in the annual averages.

Processing and distribution are relatively expensive (appendix table 13). Processing involves condensing the milk to about half its original volume, canning it, and heat-sterilizing the canned product. These functions cost 5.5 cents in 1966, of which the container cost was about 3 cents. Per capita consumption of evaporated milk rose moderately from 16.3 pounds in 1939 to a peak of 18.5 pounds in 1950, after which it declined rapidly, reaching 8.4 pounds in 1966. The areas of production have also shown a marked change. In 1939, one third of the U.S. total was produced in Wisconsin. By 1965, that State's share had fallen to 7 percent. The greatest increase was in the South Central Region, whose share rose from 8 to 25 percent.

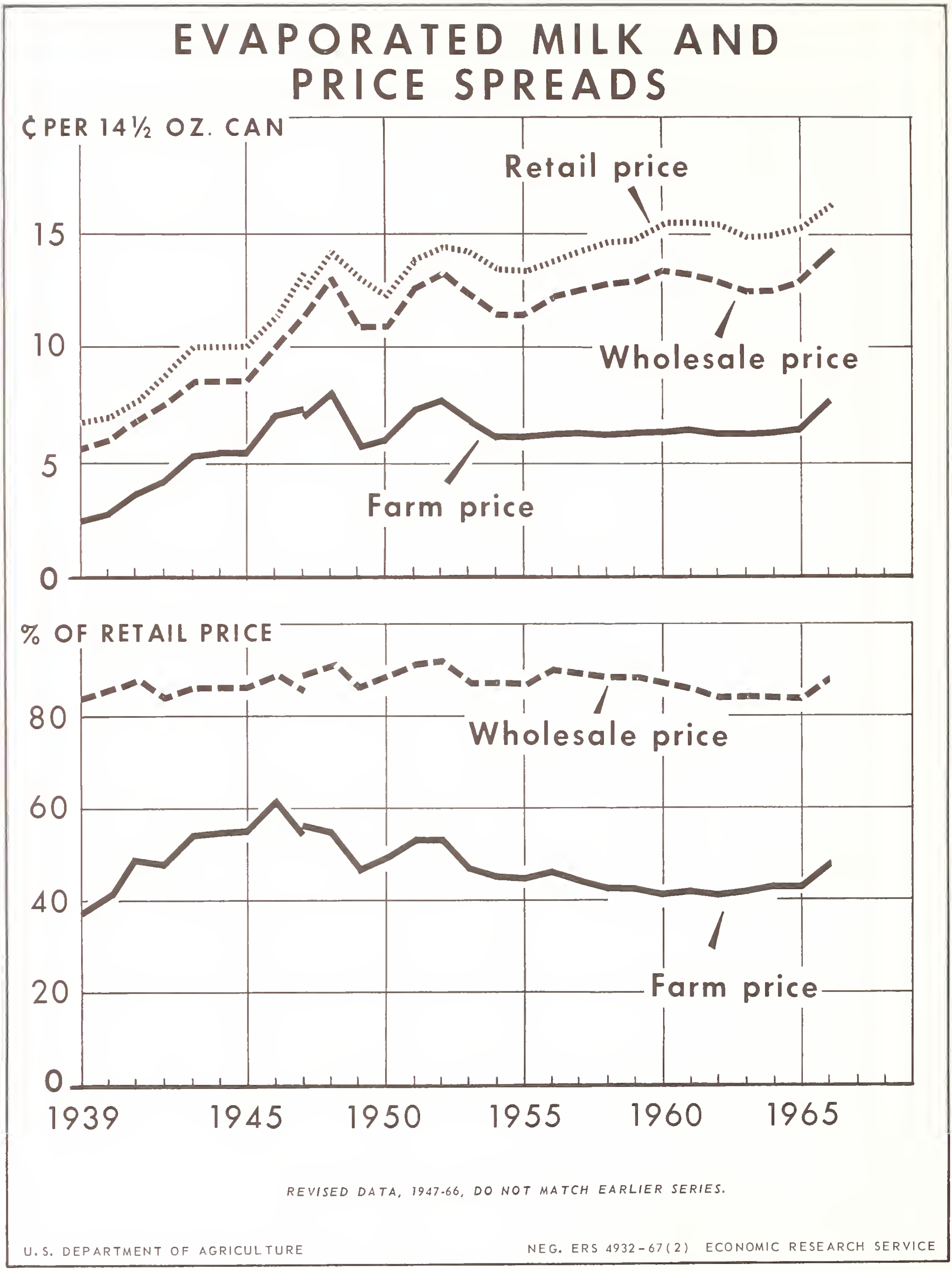
EVAPORATED MILK AND PRICE SPREADS
¢ PER 14½ OZ. CAN
15
10
5
0
Retail price
Wholesale price
Farm price
% OF RETAIL PRICE
80
60
40
20
0
Wholesale price
Farm price
1939
1945
1950
1955
1960
1965
REVISED DATA, 1947-66, DO NOT MATCH EARLIER SERIES.
U. S. DEPARTMENT OF AGRICULTURE
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Figure 8

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APPENDIX

Table 4.--Ice Cream: Retail price, wholesale price, farm value, spreads, and farmer's share of retail price, 1951-66

Year	Price per half gallon		Farm value 1/	Farm-retail spread			Percentage of retail	
	Retail 1/	Wholesale 2/		Total	Wholesale-retail	Farm-wholesale	Wholesale	Farm
	Cents	Cents	Cents	Cents	Cents	Cents	Percent	Percent
1951	85.5	79.0	24.6	60.9	6.5	54.4	92	29
1952	86.2	77.0	25.4	60.8	9.2	51.6	89	29
1953	85.6	76.5	22.7	62.9	9.1	53.8	89	27
1954	84.3	79.0	20.4	63.9	5.3	58.6	94	24
1955	82.5	78.0	20.2	62.3	4.5	57.8	95	24
1956	82.2	77.0	20.9	61.3	5.2	56.1	94	25
1957	83.7	78.0	21.1	62.6	5.7	56.9	93	25
1958	84.4	76.5	20.8	63.6	7.9	55.7	91	25
1959	84.4	74.0	21.1	63.3	10.4	52.9	88	25
1957-59 average	84.2	76.2	21.0	63.2	8.0	55.2	90	25
1960	83.5	75.0	21.5	62.0	8.5	53.5	90	26
1961	83.2	74.0	21.8	61.4	9.2	52.2	89	26
1962	82.5	72.0	20.9	61.6	10.5	51.1	87	25
1963	81.8	67.0	21.2	60.6	14.8	45.8	82	26
1964	80.4	N.A.	21.8	58.6	---	---	---	27
1965	78.7	N.A.	22.1	56.6	---	---	---	28
1966	80.6	N.A.	25.3	55.3	---	---	---	31

1/ 1951-63 from Farm-Retail Spreads for Food Products, U.S.Dept. Agr., Econ. Res. Serv., ERS-226, Apr. 1965. 1964-65 from Marketing and Transportation Situation, U.S. Dept. Agr., Econ. Res. Serv., MTS-160, Feb. 1966. 1966 from MTS-164, Feb. 1967.

2/ Wholesale prices for 1947, 1954, 1958, and 1963 derived from Census of Manufactures value and quantity of shipments of all ice cream. Ice cream included all products except mellorine in 1947; water ices, sherberts, ice milk, and products not specified by kind were excluded in subsquent years; custards were included in 1963. Interpolations for intercensus years were based on annual values of shipments reported by Bureau of Census in Annual Survey of Manufactures and on quantities from USDA production data.

N.A. Not available.

Table 5.--Cheese, American process: Retail price, wholesale price, farm value, spreads, and farmer's share of retail price, 1949-66

Year	Price per 8-ounce package		Farm value 1/	Farm-retail spread			Percent of retail	
	Retail 1/	Wholesale 2/		Total	Wholesale-retail	Farm-wholesale	Wholesale	Farm
	Cents	Cents	Cents	Cents	Cents	Cents	Percent	Percent
1949	28.2	17.7	13.4	14.8	10.5	4.3	63	48
1950	28.1	17.8	13.7	14.4	10.3	4.1	63	49
1951	32.1	21.4	16.9	15.2	10.7	4.5	67	53
1952	33.0	22.0	17.6	15.4	11.0	4.4	67	53
1953	32.9	20.4	15.4	17.5	12.5	5.0	62	47
1954	31.7	18.3	13.9	17.8	13.4	4.4	58	44
1955	31.7	17.7	13.9	17.8	14.0	3.8	56	44
1956	31.9	18.2	14.3	17.6	13.7	3.9	57	45
1957	32.1	18.2	14.4	17.7	13.9	3.8	57	45
1958	32.3	18.0	14.1	18.2	14.3	3.9	56	44
1959	32.4	18.4	14.1	18.3	14.0	4.3	57	43
1957-59 average	32.3	18.2	14.2	18.1	14.1	4.0	56	44
1960	33.8	19.8	14.9	18.9	14.0	4.9	59	44
1961	35.8	19.8	15.1	20.7	16.0	4.7	55.	42
1962	35.6	19.2	14.5	21.1	16.4	4.7	54	41
1963	35.7	20.8	14.8	20.9	14.9	6.0	58	41
1964	36.7	21.1	15.1	21.6	15.6	6.0	57	41
1965	37.7	21.7	15.4	22.3	16.0	6.3	58	41
1966	42.2	25.6	18.7	23.5	16.6	6.9	61	44

1/ 1949-63 from Farm-retail Spreads for Food Products, U.S. Dept. Agr., Econ. Res. Serv., ERS-226, Apr. 1965. 1964-65 from Marketing and Transportation Situation, U.S. Dept. Agr., Econ. Res. Serv., MTS-160, Feb. 1966. 1966 from MTS-164, Feb. 1967.

2/ Computed from USDA Market News quotation on 5-pound loaf, at Chicago.

Table 6.--Milk, fresh, home-delivered or sold in stores: Retail price, farm value, farm-retail spread, and farmer's share of retail price, 1939-66

Year	Retail price per ½ gallon		Farm value 1/	Farm-retail spread		Farmer's share	
	Cents		Cents	Cents		Percent	
1939	23.4		10.0	13.4		43	
1940	24.6		10.2	14.4		41	
1941	26.0		11.0	15.0		42	
1942	28.6		12.8	15.8		45	
1943	29.8		14.4	15.4		48	
1944	30.0		14.8	15.2		49	
1945	30.0		15.0	15.0		50	
1946	34.0		18.0	16.0		53	
1947 (old)	38.0		20.6	17.4		54	
	Home	Store	Farm	Home	Store	Home	Store
1947 (new)	38.7	36.6	21.0	17.7	15.6	54	57
1948	43.1	40.7	23.0	20.1	17.7	53	57
1949	41.7	38.8	21.0	20.7	17.8	50	54
1947-49 average	41.2	38.7	21.7	19.5	17.0	53	56
1950	40.7	37.8	20.0	20.7	17.8	49	53
1951	45.7	42.5	22.8	22.9	19.7	50	54
1952	47.8	44.7	24.2	23.6	20.5	51	54
1953	47.2	43.7	22.6	24.6	21.1	48	52
1954	46.4	42.9	21.0	25.4	21.9	45	49
1955	46.6	42.9	20.9	25.7	22.0	45	49
1956	48.9	44.3	21.6	27.3	22.7	44	49
1957	50.4	45.9	22.1	28.3	23.8	44	48
1958	51.0	46.7	21.8	29.2	24.9	43	47
1959	51.1	47.2	21.8	29.3	25.4	43	46
1957-59 average	50.8	46.6	21.9	28.9	24.7	43	47
1960	52.4	48.3	22.1	30.3	26.2	42	46
1961	52.9	48.2	22.1	30.8	26.1	42	46
1962	52.6	47.8	21.7	30.9	26.1	41	45
1963	52.4	47.6	21.5	30.9	26.1	41	45
1964	52.8	47.7	21.8	31.0	25.9	41	46
1965	52.6	47.2	21.8	30.8	25.4	41	46
1966	55.5	49.8	23.9	31.6	25.9	43	48

1/ Payment to farmer for 4.39 lb. of Class I milk.

Sources: 1939-47 from Farm-Retail Spreads for Food Products, U.S. Dept. Agr., Misc. Pub. 741, Nov. 1957 (Converted from data on quart basis). 1947-63 from Farm-Retail Spreads for Food Products, U.S. Dept. Agr., Econ. Res. Serv., ERS-226, Apr. 1965. 1964-65 from Marketing and Transportation Situation, U.S. Dept. Agr., Econ. Res. Serv., MTS-160, Feb. 1966. 1966 from MTS-164, Feb. 1967.

Table 7.--Creamery butter: Retail price, wholesale price, farm value, spreads, and farmer's share of retail price, 1939-66

Year	Price per pound		Farm value 1/	Farm-retail spread			Percent of retail	
	Retail 1/	Wholesale 2/		Total	Wholesale-retail	Farm-wholesale	Wholesale	Farm
	Cents	Cents	Cents	Cents	Cents	Cents	Percent	Percent
1939	32.3	25.4	20.1	12.2	6.9	5.3	79	62
1940	35.8	28.7	23.7	12.1	7.1	5.0	80	66
1941	40.9	33.8	28.4	12.5	7.1	5.4	83	69
1942	47.0	39.5	33.4	13.6	7.5	6.1	84	71
1943	52.4	44.0	41.4	11.0	8.4	2.6	84	79
1944	49.7	41.5	41.8	7.9	8.2	-0.3	84	84
1945	50.4	42.3	41.7	8.7	8.1	0.6	84	83
1946	70.5	61.9	53.9	16.6	8.6	8.0	88	76
1947 (old)	80.0	70.6	61.0	19.0	9.4	9.6	88	76
1947 (new)	78.5	70.6	66.1	12.4	7.9	4.5	90	84
1948	84.6	75.2	68.8	15.8	9.4	6.4	89	81
1949	70.8	61.1	54.7	16.1	9.7	6.4	86	77
1947-49 average	78.0	69.0	63.2	14.8	9.0	5.8	88	81
1950	71.0	61.7	55.7	15.3	9.3	6.0	87	78
1951	79.9	69.2	64.7	15.2	10.7	4.5	87	81
1952	83.4	72.2	66.1	17.3	11.2	6.1	87	79
1953	77.5	65.9	59.0	18.5	11.6	6.9	85	76
1954	71.1	59.7	52.2	18.9	11.4	7.5	84	73
1955	69.6	57.4	50.9	18.7	12.2	6.5	82	73
1956	70.8	59.2	52.7	18.1	11.6	6.5	84	74
1957	72.9	59.6	52.7	20.2	13.3	6.9	82	72
1958	72.9	58.7	52.0	20.9	14.2	6.7	80	71
1959	73.9	59.7	53.2	20.7	14.2	6.5	81	72
1957-59 average	73.2	59.3	52.6	20.6	13.9	6.7	81	72
1960	73.5	59.1	53.4	20.1	14.4	5.7	80	73
1961	74.9	60.5	54.5	20.4	14.4	6.0	81	73
1962	73.8	58.6	52.3	21.5	15.2	6.3	79	71
1963	73.6	58.2	52.2	21.4	15.4	6.0	79	71
1964	74.4	59.0	53.1	21.3	15.4	5.9	79	71
1965	75.4	60.2	54.5	20.9	15.2	5.7	80	72
1966	82.2	66.6	60.7	21.5	15.6	5.9	81	74

1/ 1939-47 from Farm Retail Spreads for Food Products, U.S. Dept. Agr., Misc. Pub. 741, Nov. 1957. 1947-63 from Farm-Retail Spreads for Food Products, U.S. Dept. Agr., Econ. Res. Serv., ERS-226, Apr. 1965. 1964-65 from Marketing and Transportation Situation, U.S. Dept. Agr., Econ. Res. Serv., MTS-160, Feb. 1966. 1966 from MTS-164, Feb. 1967.

2/ USDA Market News reports on Grade A (92-score) bulk butter in boxes at Chicago.

Table 8.--Milk, evaporated: Retail price, wholesale price, farm value, spreads and farmer's share of retail price, 1939-66

Year	Price per 14½-ounce can		Farm value 1/	Farm-retail spread			Percent of retail	
	Retail 1/	Wholesale 2/		Total	Wholesale-retail	Farm-wholesale	Wholesale	Farm
	Cents	Cents	Cents	Cents	Cents	Cents	Percent	Percent
1939	6.8	5.7	2.6	4.2	1.1	3.1	84	38
1940	7.0	6.0	2.9	4.1	1.0	3.1	86	41
1941	7.8	6.9	3.8	4.0	0.9	3.1	88	49
1942	8.9	7.5	4.3	4.6	1.4	3.2	84	48
1943	10.0	8.6	5.4	4.6	1.4	3.2	86	54
1944	10.0	8.6	5.5	4.5	1.4	3.1	86	55
1945	10.0	8.6	5.5	4.5	1.4	3.1	86	55
1946	11.5	10.2	7.0	4.5	1.3	3.2	89	61
1947 (old)	13.1	11.3	7.2	5.9	1.8	4.1	86	55
1947 (new)	12.7	11.3	7.1	5.6	1.4	4.2	89	56
1948	14.3	13.0	8.0	6.3	1.3	5.0	91	56
1949	12.7	10.9	5.8	6.9	1.8	5.1	86	46
1947-49 average	13.2	11.7	7.0	6.2	1.5	4.7	89	53
1950	12.2	10.9	6.0	6.2	1.3	4.9	89	49
1951	13.9	12.7	7.4	6.5	1.2	5.3	91	53
1952	14.4	13.2	7.7	6.7	1.2	5.5	92	53
1953	14.1	12.3	6.6	7.5	1.8	5.7	87	47
1954	13.4	11.6	6.0	7.4	1.8	5.6	87	45
1955	13.3	11.6	6.0	7.3	1.7	5.6	87	45
1956	13.5	12.1	6.2	7.3	1.4	5.9	90	46
1957	14.1	12.6	6.2	7.9	1.5	6.4	89	44
1958	14.6	12.8	6.1	8.5	1.8	6.7	88	42
1959	14.7	12.9	6.2	8.5	1.8	6.7	88	42
1957-59 average	14.5	12.8	6.2	8.3	1.7	6.6	88	43
1960	15.2	13.2	6.3	8.9	2.0	6.9	87	41
1961	15.3	13.1	6.5	8.8	2.2	6.6	86	42
1962	15.1	12.7	6.2	8.9	2.4	6.5	84	41
1963	14.9	12.5	6.2	8.7	2.4	6.3	84	42
1964	14.9	12.5	6.4	8.5	2.4	6.1	84	43
1965	15.2	12.7	6.5	8.7	2.5	6.2	84	43
1966	16.0	14.0	7.7	8.3	2.0	6.3	88	48

1/ 1939-47 from Farm-Retail Spreads for Food Products, U.S. Dept. Agr., Misc. Pub. 741, Nov. 1957. 1947-63 from Farm-Retail Spreads for Food Products, U.S. Dept. Agr., Econ. Res. Serv., ERS-226, Apr. 1965. 1964-65 from Marketing and Transportation Situation, U.S. Dept. Agr., Econ. Res. Serv., MTS-160, Feb. 1966. 1966 from MTS-164, Feb. 1967

2/ USDA Statistical Reporting Service. Average selling price per case (48 cans) at manufacturers' distributing points (not delivered to stores) advertised and unadvertised brands.

Table 9.--American process cheese: Marketing function and production components of retail price per 8-ounce package, 1966

Market or function	Price		Sources and comments
	Actual	Relative	
	Cents	Percent	
1. Retail price	42.2	100.0	Marketing and Transportation Situation, U.S Dept. Agr., Econ. Res. Serv., MTS-164, Feb 1967.
2. Retailing	8.7	20.6	Same percentage as National Commission on Food Marketing, Tech. Study No. 9, June 1966.
3. Into-store price	33.5	79.4	Item 1 less item 2.
4. Wholesaling	5.2	12.3	Item 3 less items 5 and 6.
5. Intercity transportation	0.5	1.2	ICC data on gross freight revenue for 1962 show 0.902 cent per pound by rail and 1.145 cents by truck; weighted average = 0.99 cent.
6. Processed cheese, f.o.b. plant	27.8	65.9	USDA Market News, wholesale price at Chicago, in 5-pound loaf, plus 2.2 cents allowance for slicing and packaging, computed by subtracting gross margins of 7.20 cents per pound on unsliced lots, 3 and 9, from margin of 11.66 cents on sliced lots, 5, 7, and 8a, Wis. Res. Bul 210; table 8.
7. Processing and packaging	5.2	12.3	Item 6, less item 8.
8. Natural cheese, f.o.b. plant	22.6	53.6	USDA Market News price of 23.0 cents per half pound for 40-pound block Cheddars at Wis. assembly points, 1966, less assembly cost of 0.4 per lot 5, Wis. Res. Bul 210, table 8.
9. Cheesemaking	3.9	9.3	Item 8 less item 10.
10. Farm value	18.7	44.3	MTS-164.

Table 10.--Ice cream: Marketing function and production components of retail price per half-gallon, 1956

Market or function	Price		Sources and comments
	Actual	Relative	
	Cents	Percent	
1. Retail price.....	80.6	100.0	Marketing and Transportation Situation, U.S. Dept. Agr., Econ. Res. Serv., MTS-164, Feb. 1967.
2. Retailing........	18.6	23.1	Same percentage as National Commission on Food Marketing, Tech. Study No. 9, June 1966.
3. Into-store price.	62.0	76.9	Item 1 less item 2. Compares with average value of shipments from ice cream plants, per 1963 Census of Manufactures, MC 63(2)-20B, at 67.0 cents.
4. Processing and distribution....	36.7	45.5	Item 3 less item 5. Compares with 1964 costs of 33.2 cents, derived from data furnished by reporting firms for the USDA series, Milk Distributors' Sales and Costs. The ice cream operations in this sample of plants were secondary to the primary operation of milk bottling.
5. Farm value.......	25.3	31.4	MTS-164; 1.4 cents (1.7 percent) is the farm value of the sugar in the mix and 23.9 cents (29.7 percent) is the value of the milk ingredients.

Table 11.--Fluid milk: Marketing function and production components of retail price per half-gallon, 1956

Market or function	Home-delivered		Store		Sources and comments
	Price	Proportion	Price	Proportion	
	Cents	Percent	Cents	Percent	
1. Retail price....	55.5	100.0	49.8	100.0	Marketing and Transportation Situation, U.S. Dept. Agr. Econ. Res. Serv., MTS-164, Feb. 1967.
2. Retailing.......	---	---	7.6	15.2	Same percentage as National Commission on Food Marketing, Tech. Study No. 9, June, 1966
3. Into-store price	---	---	42.2	84.8	Item 1 less item 3.
4. Delivery and selling........	21.2	38.2	7.3	14.8	Proportionate to data from Milk Distributors' Sales and Costs. 1/
5. Processed price	34.3	61.8	34.9	70.0	Item 3 less item 4.
6. Processing and administration.	9.0	16.2	9.6	19.2	Proportionate to data from Milk Distributors' Sales and Costs. 1/
7. Delivered to plant..........	25.3	45.6	25.3	50.8	Item 8 plus item 9.
8. Assembly........	1.4	2.5	1.4	2.8	Average hauling allowance used by Department of Agriculture in computing item 9. (33 cents/cwt.)
9. Farm value......	23.9	43.1	23.9	48.0	MTS-164.

1/ Special tabulation, for milk processing operations only, covering first quarter of 1964, showed delivery costs on sales at wholesale and plant platform of $1.75 per hundred pounds (7.4 cents per half-gallon equivalent), administration costs of $0.50 (2.1 cents), and dealer's procurement costs of $0.05 (0.2 cent). Processing costs in glass bottles were $1.22, and in paper $1.80 (Milk Distributors' Sales and Costs, July-Sept. and Oct.-Dec. 1963; U.S. Dept. Agr., Econ. Res. Serv. MDSC-23, 1963); weighting 21 percent glass and 79 percent paper (Milk Distributors' Sales and Costs, Jan.-Mar. 1964; U.S. Dept Agr., Econ. Res. Serv., MDSC-24) yields an average processing cost of $1.68 (7.2 cents per half-gallon) on milk sold through stores. For home-delivered milk, weights were 68 percent glass and 32 percent paper, an average of $1.41 (6.1 cents).

Table 12.--Creamery butter: Marketing function and production components of retail price, per pound, 1966

Market or function	Price		Sources and comments
	Actual	Relative	
	Cents	Percent	
1. Retail price.....	82.2	100.0	Marketing and Transportation Situation, U.S. Dept. Agr., Econ. Res. Serv., MTS-164, Feb. 1967.
2. Retailing........	8.4	10.2	Same percentage as National Commission on Food Marketing, Tech. Study No. 9, June, 1966.
3. Into-store price.	73.8	89.8	Item 1 less item 2.
4. Packaging and local delivery..	7.2	8.8	Item 3, less item 5. Includes packaging cost of 3.7 cents, which is average value of shipments in consumer packages less average value in bulk, as reported in 1963 Census of Manufacutures, MC 63 (2)-20B, table 6A.
5. Wholesale price..	66.6	81.0	Arithmetic average of Market News wholesale prices, Grade AA and A, New York and Chicago, which gives an approximation of U.S. average price of bulk butter at consuming cities. No wholesaling margin is indicated because no significant wholesaling functions are reflected in the wholesale price quotations at Chicago and New York. The terminal wholesaling trade performs some storage, printing, and local delivery functions; if butter is sold in bulk form, a premium over the wholesale quotation is charged.
6. Intercity transportation......	0.9	1.1	Item 5 less item 7. ICC data on gross freight revenue for 1962 show 0.88 cent per pound by rail and 0.97 cent by truck; weighted average = 0.904. 1963 Census of Transportation, U.S. Bur. Census, TC63 (P) C1-1, shows average rail haul 680 miles and motor carrier haul 428 miles. Rail rate per pound of butter, Minneapolis or Mason City to New York City or Philadelphia is 1.26 cents.
7. Price f.o.b. plant	65.7	79.9	Average prices received by Iowa, Minnesota, and Wisconsin shippers, according to USDA Market News reports. Census of Manufactures, average value of shipments in bulk form, was very close to Market News at 57.8 cents, and 58.6 cents, respectively, for 1963.
8. Processing.......	5.0	6.1	Item 7 less item 9.
9. Farm value.......	60.7	73.8	MTS-164.

Table 13.--Evaporated milk: Marketing function and production components of retail price per $14\frac{1}{2}$ ounce can, 1966

Market or function	Price		Sources and comments
	Actual	Relative	
	Cents	Percent	
1. Retail price	16.0	100.0	Marketing and Transportation Situation, U.S. Dept. Agr., Econ. Res. Serv., MTS-164, Feb. 1967.
2. Retailing	1.6	10.1	Same percentage as National Commission on Food Marketing, Tech. Study No. 9, June, 1966.
3. Into-store price	14.4	89.9	Item 1 less item 2.
4. Wholesaling and local delivery	0.4	2.4	From the McKinsey - General Foods Study, The Economics of Food Distributors, published by General Foods Corp., Oct. 1963. For canned goods, direct product costs, Exhibit 28, were 9 cents per case for warehousing and 5 cents per case for delivery to stores. Inflating the total to cover the third of total costs not allocable to specific products as direct product costs, yields 21 cents per case. Applied to evaporated milk this is 0.4 cents per can.
5. Wholesale price	14.0	87.5	USDA, Statistical Reporting Service, Manufacturers' average selling prices per case (48 cans) in carlots, at distributing points.
6. Intercity transportation	0.8	5.0	ICC data for "food products in cans and packages, not frozen," a category which includes evaporated milk, indicates 1962 gross freight revenue per ton originated at $16.78 by rail and $15.06 by truck. These are equal to 0.8 cent per can. 1963 Census of Transportation, U.S. Bur. Census, TC 63 (P) C1-1, indicates average hauls of 370 miles by rail and 392 miles by motor carrier. The 0.8 cent is also equal to the rail rate from Elkorn, Wis., to New York City and Philadelphia, distances of 905 and 828 miles, respectively.
7. Processed price at plant	13.2	82.5	Item 5 less item 6. Compares with 1963 average value of shipments of 11.8 cents per can, from Census of Manufactures, U.S. Bur. Census, MC 63 (2)-20B-3, Table 6a, product code 20232 12.
8. Processing, canning, and storage	5.5	34.4	Item 7 less item 9. Compares with 1961 cost of 4.02 cents per can in model plant, per table 31 in Operations and Costs of Manufacturing Dairy Products in California by Aaron C. Johnson, Olan D. Forker, and D.A. Clarke, Jr.; Giannini Foundation Res. Rpt. 272, Calif. Agr. Expt. Sta., Jan. 1964.
9. Farm value	7.7	48.1	MTS-164.

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